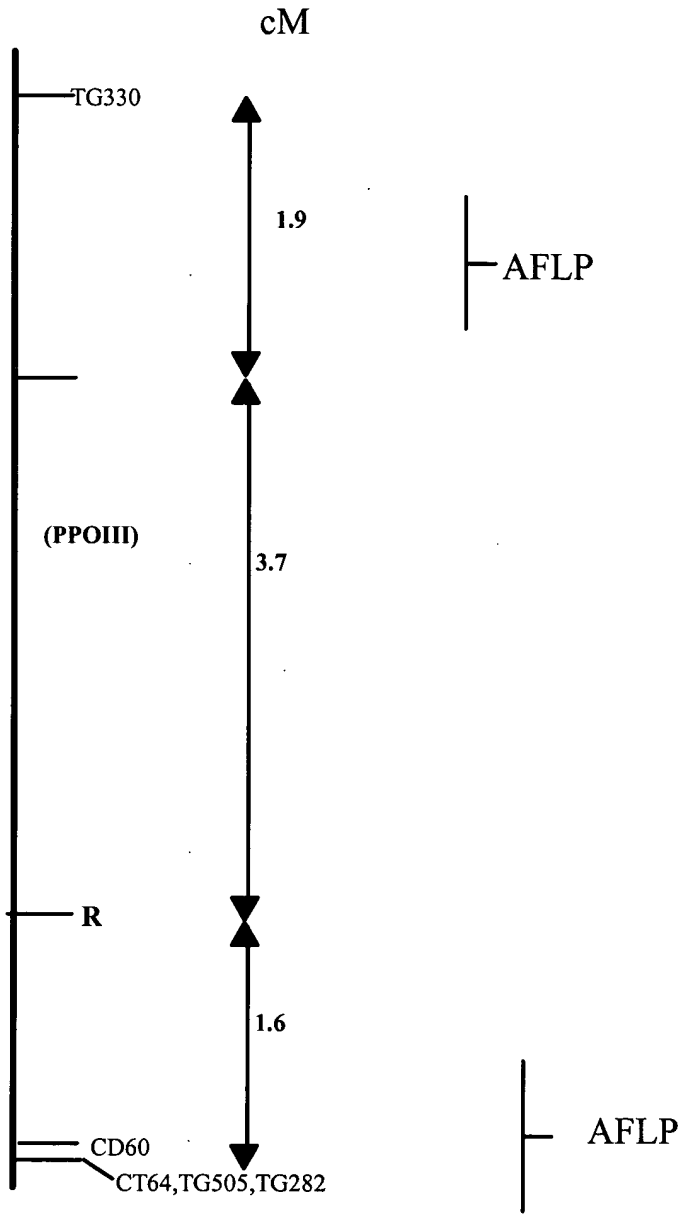

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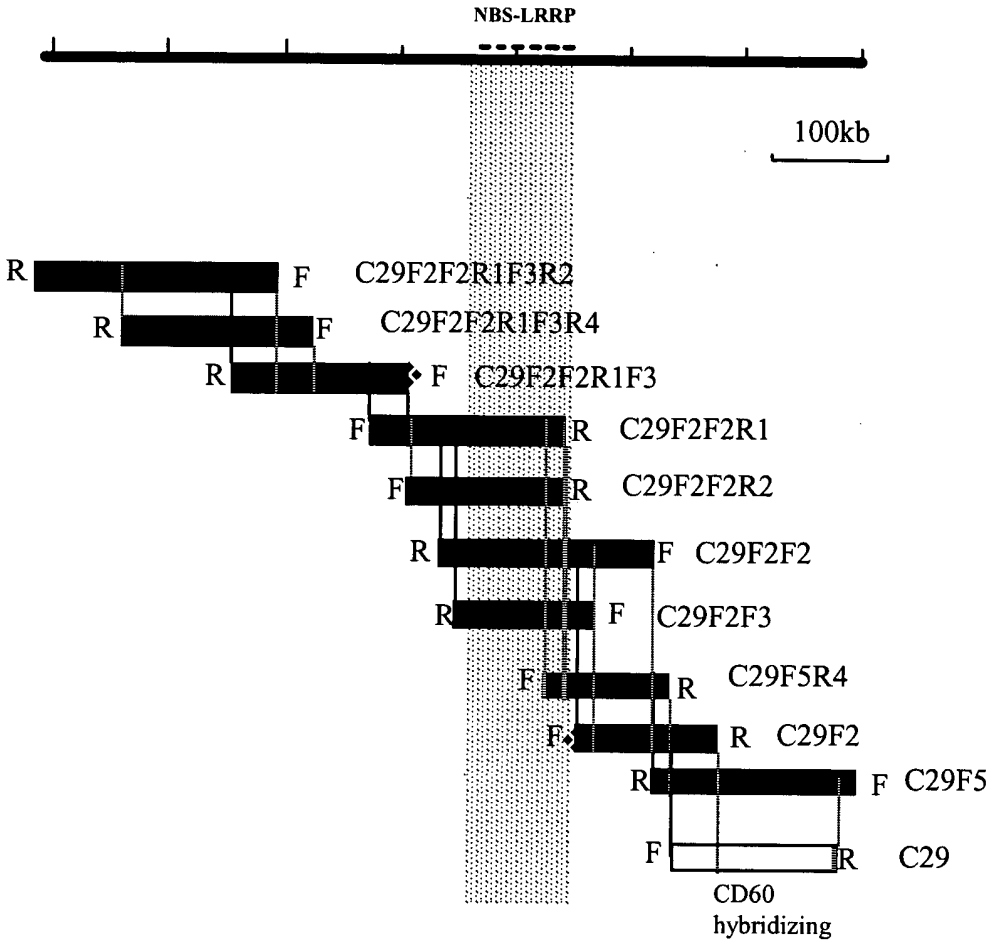
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F R C29F2F2R2
R F C29F2F2
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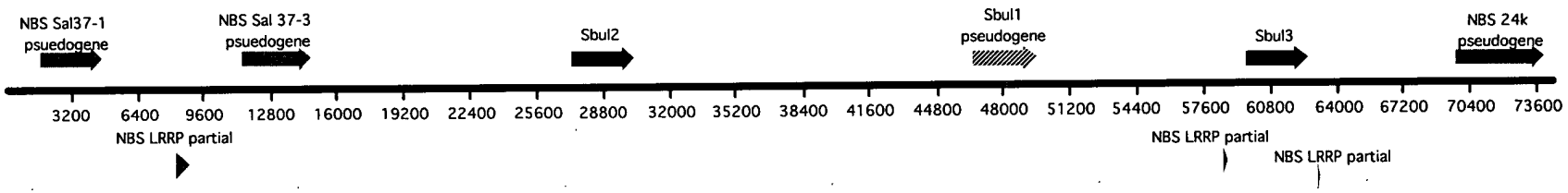
F R C29F5R4
F R C29F2
R F C29F5
F R C29
CD60
hybridizing

FIG. 2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psuedogene
Sbul2
Sbul1
pseudogene
Sbul3
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16000
19200
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38400
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48000
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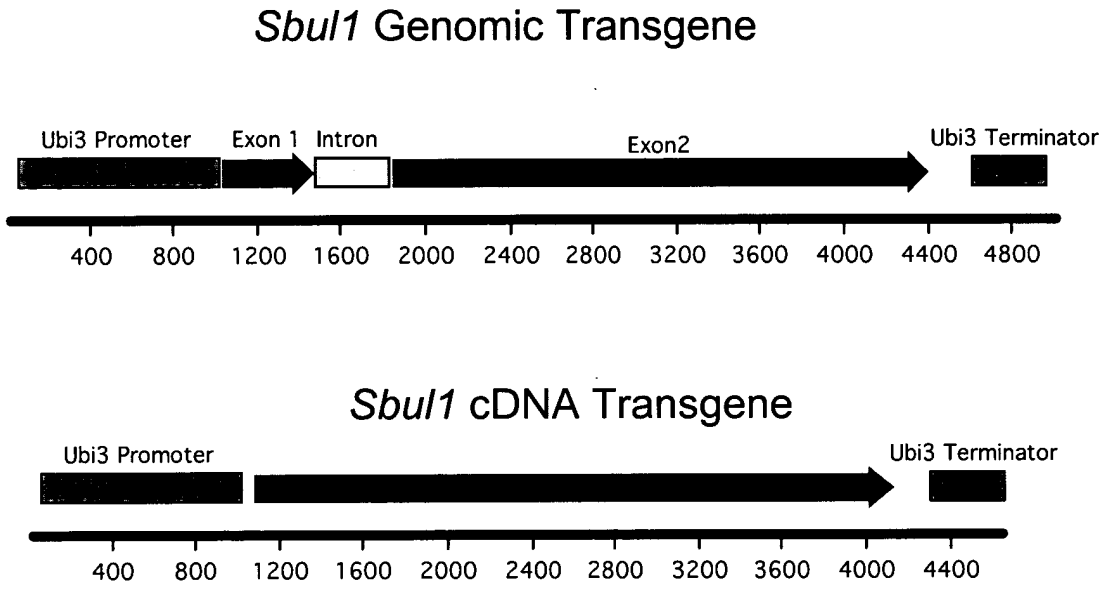
70400
73600
NBS LRRP partial
NBS LRRP partial
NBS LRRP partial

FIG. 3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Ubi3 Promoter
Exon 1
Intron
Exon2
Ubi3 Terminator
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800
1200
1600
2000
2400
2800
3200
3600
4000
4400
4800
Sbul1 cDNA Transgene
Ubi3 Promoter
Ubi3 Terminator
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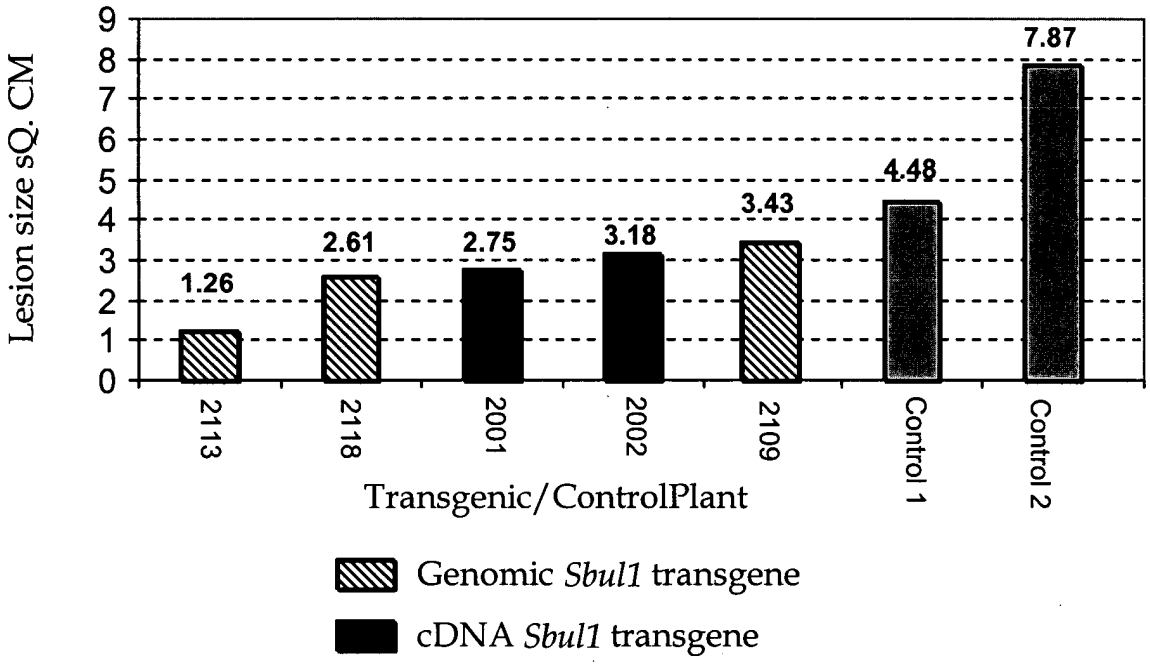
800
1200
1600
2000
2400
2800
3200
3600
4000
4400

FIG. 4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7
6
5
4
3
2
1
0
1.26
2.61
2.75
3.18
3.43
4.48
7.87
2113
2118
2001
2002
2109
Control 1
Control 2
Transgenic/ControlPlant
Genomic Sbul1 transgene
cDNA Sbul1 transgene

FIG. 5

Alignment of *Sbul1* (SEQ ID NO:4) and *Sbul2* (SEQ ID NO:6) deduced Amino Acid sequences

```
Sbul1:    MAEAFLQVLLDNLTCFIQGELGLILGFKDEFEKLQSTFTTIQAVLEDAQKKQLKDKAIEN
Sbul2:    MAEAFLQVLLDNLTCFIQGEVGLILGFKDEFEKLQSTFTTIQAVLEDAQKKQLKDKAIEN

Sbul1:    WLQKLNAAAYEADDILDECKTEAPIRQKKNKYGCYHPNVITFRHKIGKRMKKIMEKLDVI
Sbul2:    WLQKLNAAVYEADDILDECKTEAPIRQKKNKYGCYHPNVIAFRHKIGKRMKKIMEKLDVI

Sbul1:    AAERIKFHLDERTIERQVATRQTG---Intron-------FVLNEPQVYGRDKEKDEIVK
Sbul2:    AAERIKFHLAERTTERQVATRQTG---Intron-------FVLNEPQVYGRDKEKDEIVK

Sbul1:    ILINNVSNAQTLPVLPILGMGGLGKTTLAQMVFNDQRVIEHFHPKIWICVSEDFNEKRLI
Sbul2:    ILINIVSDAQTLSVLPILGMGGLGKTTLAQMVFNDQRVIEHFLPKIWICVSEDFNEKRLI

Sbul1:    KEIVESIEEKSLGGMDLAPLQKKLRDLLNGKKYLLVLDDVWNEDQDKWAKLRQVLKVGA
Sbul2:    KEIVESIEEKSLGDMDLAPLQKKLQDLLNGKKYLLVLDDIWNEDQDKWAKLREVLKVGA

Sbul1:    SGASVLTTTRLEKVGSIMGTLQPYELSNLSQEDCWLLFMQRAFGHQEEINLNLVAIGKEI
Sbul2:    SGASILTTTRLEKVGSIMQTLQPYELSNLCQEDCWLLFMQRAFGHQEEINHNLVAIGKEI

Sbul1:    VKKCGGVPLAAKTLGGILRFKREERQWEHVRDSEIWKLPQEESSILPALRLSYHHLPLDL
Sbul2:    VKKCGGVPLAAKTLGGILRFKRQERQWEHVRDSEIWKLPQEESSILPALKLSYHHLPLDL

Sbul1:    RQCFTYCAVFPKDTEMEKGNLISLWMAHGFILSKGNLELENVGNEVWNELYLRSFFQEIE
Sbul2:    RQCFSYCAVFPKDTKMEKENLISLWMAHGFLLSKGNLELEDVGNEVWNELYLRSFFQEIE

Sbul1:    VKSGQTYFKMHDLIHDLATSLFSASTSSSNIREIIVENYIHMMSIGFTKVVSSYSLSHL
Sbul2:    VTYGKTYFKMHDLIHDLATSLFSASASSNNIREINVKGYPHMMSIGFAKVVSFYSRSHF

Sbul1:    QKFVSLRVLNLSDIKLKQLPSSIGDLVHLRYLNLSGNTSIRSLPNQLCKLQNLQTLDLHGC
Sbul2:    QKFVSLRVLNLSNLELKQLPSSIGDLVHLRYLNLSDNNRIRSLPKQLCKLQNLQTLDLRCC

Sbul1:    HSLCCLPKETSKLGSLRNLLLDGCYGLTCMPPRIGSLTCLKTLSRFVVGIQKKSCQLGELR
Sbul2:    YRLSCLPKETSKLGSLRNLLLDRCHGLTCMPPRIGSLTCLKTLDRFAMG-REKSPQIGELR

Sbul1:    NLNLYGSIEITHLERVKNDMDAKEANLSAKENLHSLSMKWDDDERPRIYESEKVEVLE
Sbul2:    NLNLYGSISITHLERVKNDMDAKEANLSSKENLHSLSMIWDEDERPHRYESEDVEVLE

Sbul1:    ALKPHSNLTCLTIRGFRGIRLPDWMNHSVLKNVVSIEIISCKNCSCLPPFGELPCLKSLEL
Sbul2:    ALKPHSNLTCLTIIGFRGIRLPDWMNHSVLKNVVSLEISDCKNCSCLPPFGELPCLNSLQL

Sbul1:    WRGSAEVEYVDSGFPTRRRFPSLRKLNIREFDNLKGLLKKEGEEQCPVLEEIEIKC
Sbul2:    WSGSAEVEYIDSGFPTRRRFPSLRKLIIGEFDNLKGLVKKEGEEQFPVLEEMEINW
```

FIG. 6A

```
Sbul1:      CPMFVIPTLSSVKKLVVSGDKSDAIGFSSISNLMALTSLQIRYNKEDASLPEEMFKSLANL
Sbul2:      CPMFVIPTLSSVNKLVVSGEESDAIGFSSISNLRALTSLNISYNSEATSLPEEMFKSLANL

Sbul1:      KYLNISFYFNLKELPTSLASLNALKHLEIHSCYALESLPEEGVKGLISLTQLSITYCEMLQ
Sbul2:      KYLNIYYFKNLKELPTNLASLNALKNLEIESCYALESLPEEGVKGLTSLTQLSITYCTMLQ

Sbul1:      CLPEGLQHLTALTNLSVEFCPTLAKRCEKGIGEDWYKIAHIPRVFIY*
Sbul2:      CLPEGLQHLTALTNLSVRDCPTLAKRCEKGIGEDWYKIAHIPDVFIR*
```

FIG. 6B

Alignment of *Sbul1* (SEQ ID NO:3) and *Sbul2* (SEQ ID NO:5) gene sequences

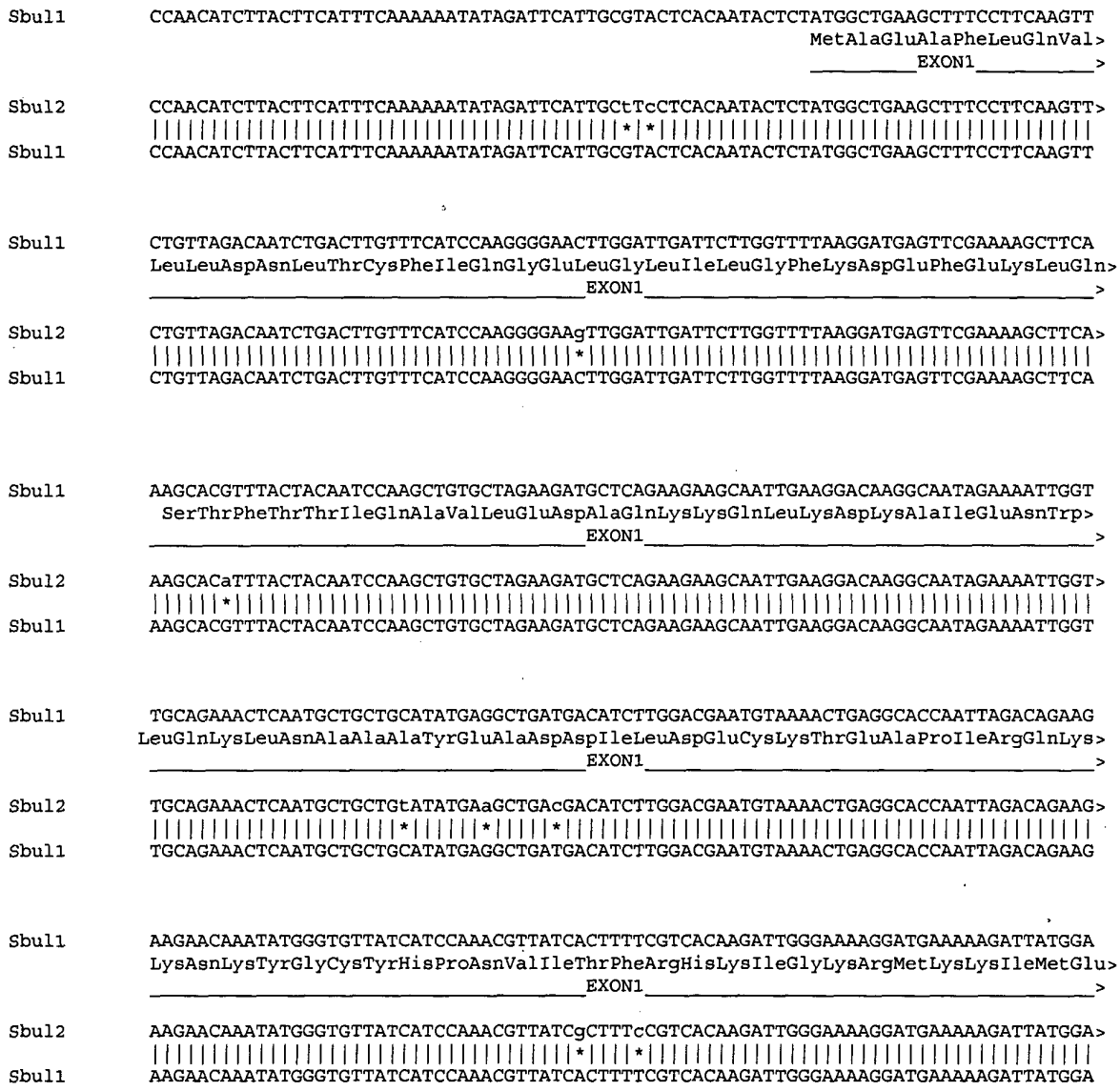
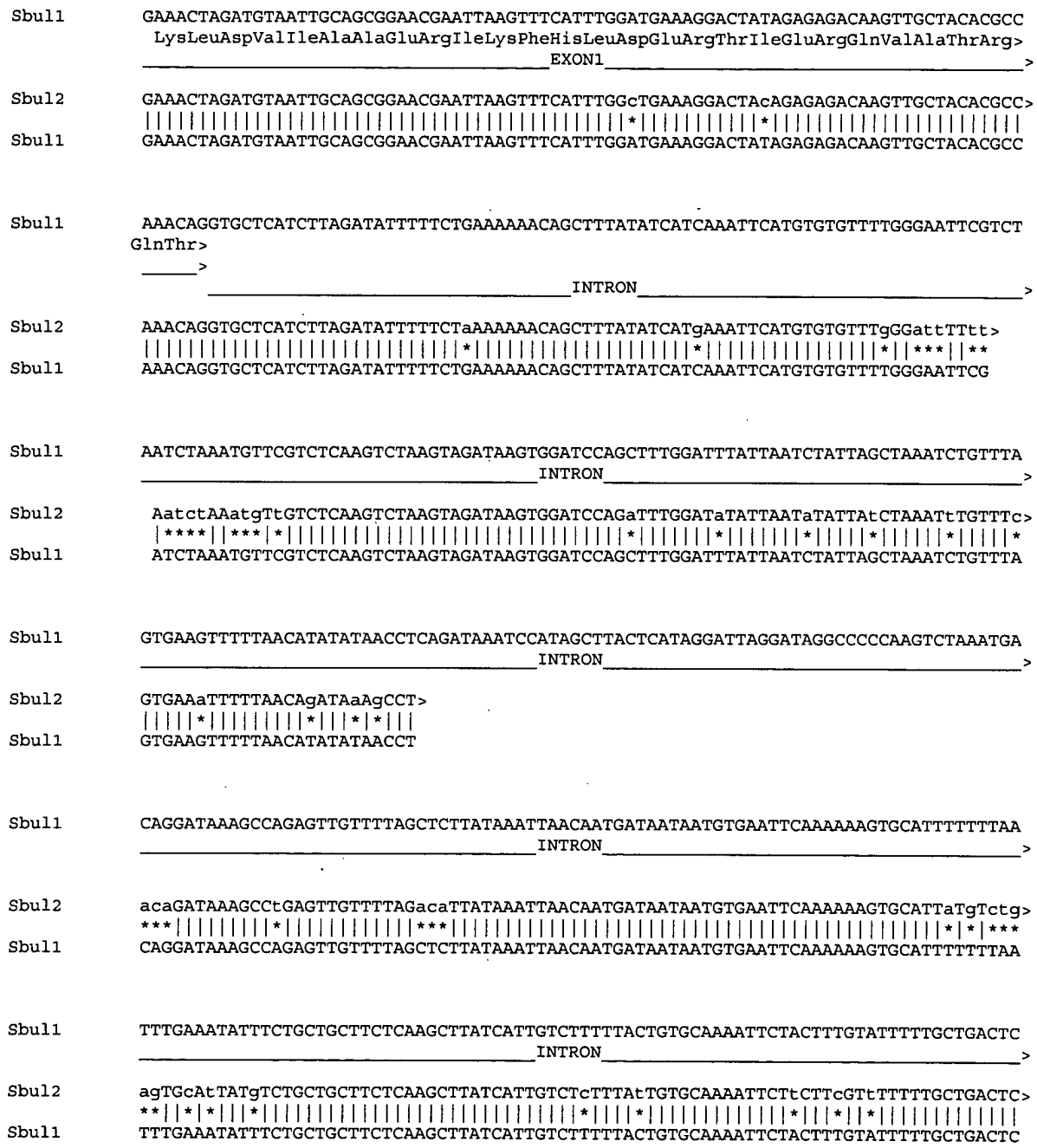


FIG. 7A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LysLeuAspValIleAlaAlaGluArgIleLysPheHisLeuAspGluArgThrIleGluArgGlnValAlaThrArg>
EXON1
Sbul2
GAAACTAGATGTAATTGCAGCGGAACGAATTAAGTTTCATTTGGcTGAAAGGACTAcAGAGAGACAAGTTGCTACACGCC>
Sbul1
GAAACTAGATGTAATTGCAGCGGAACGAATTAAGTTTCATTTGGATGAAAGGACTATAGAGAGACAAGTTGCTACACGCC
Sbul1
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GlnThr>
INTRON
Sbul2
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Sbul1
AAACAGGTGCTCATCTTAGATATTTTTCTGAAAAAACAGCTTTATATCATCAAATTCATGTGTGTTTTGGGAATTCG
Sbul1
AATCTAAATGTTCGTCTCAAGTCTAAGTAGATAAGTGGATCCAGCTTTGGATTTATTAATCTATTAGCTAAATCTGTTTA
INTRON
Sbul2
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Sbul1
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Sbul1
GTGAAGTTTTTAACATATATAACCTCAGATAAATCCATAGCTTACTCATAGGATTAGGATAGGCCCCCAAGTCTAAATGA
INTRON
Sbul2
GTGAAaTTTTTAACAgATAaAgCCT>
Sbul1
GTGAAGTTTTTAACATATATAACCT
Sbul1
CAGGATAAAGCCAGAGTTGTTTTAGCTCTTATAAATTAACAATGATAATAATGTGAATTCAAAAAAGTGCATTTTTTTAA
INTRON
Sbul2
acaGATAAAGCCtGAGTTGTTTTAGacaTTATAAATTAACAATGATAATAATGTGAATTCAAAAAAGTGCATTaTgTctg>
Sbul1
CAGGATAAAGCCAGAGTTGTTTTAGCTCTTATAAATTAACAATGATAATAATGTGAATTCAAAAAAGTGCATTTTTTTAA
Sbul1
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INTRON
Sbul2
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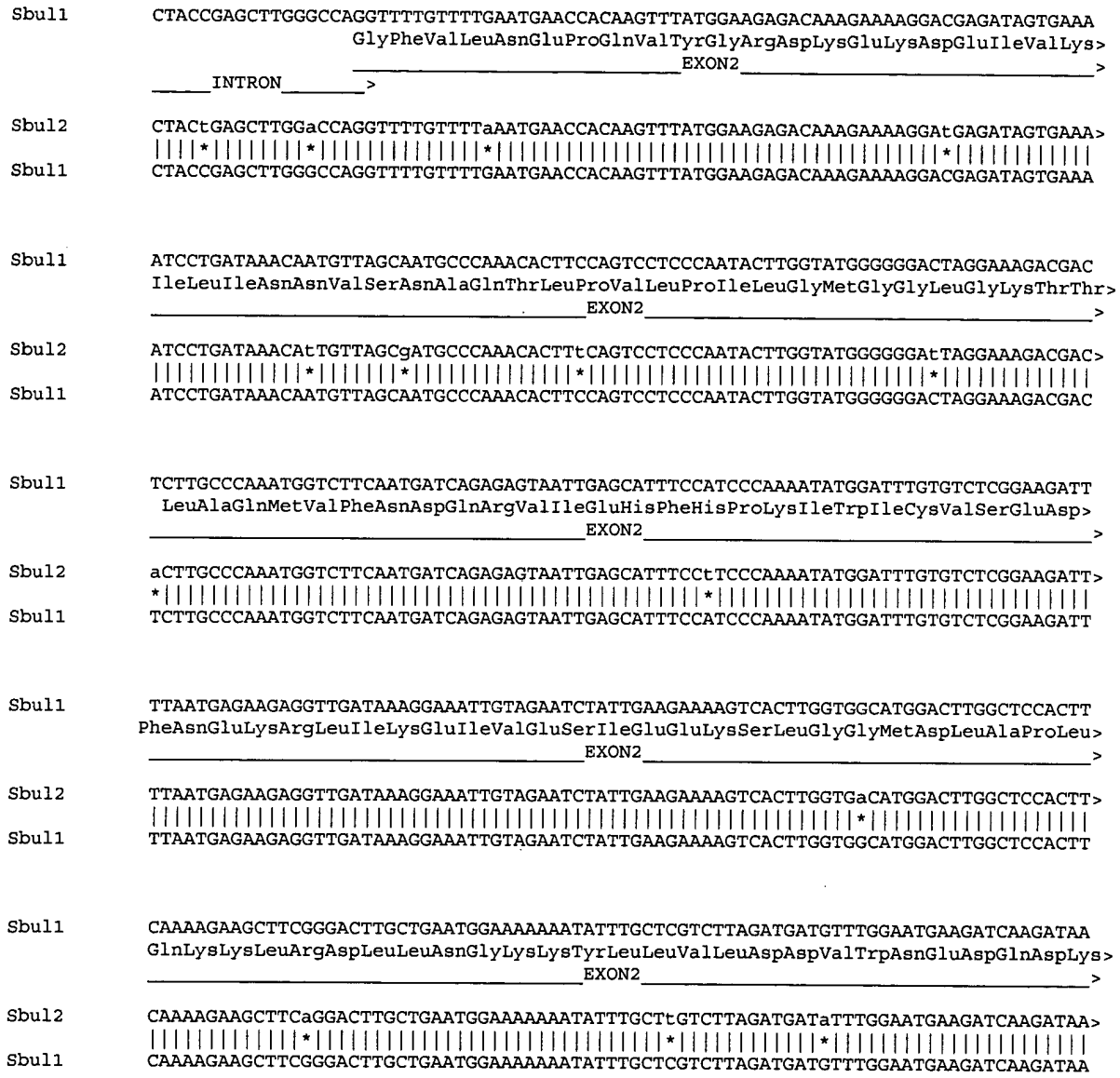
FIG. 7B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EXON2
INTRON
Sbul2 CTACtGAGCTTGGaCCAGGTTTTGTTTTaAATGAACCACAAGTTTATGGAAGAGACAAAGAAAAGGAtGAGATAGTGAAA>
Sbul1 CTACCGAGCTTGGGCCAGGTTTTGTTTTGAATGAACCACAAGTTTATGGAAGAGACAAAGAAAAGGACGAGATAGTGAAA
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IleLeuIleAsnAsnValSerAsnAlaGlnThrLeuProValLeuProIleLeuGlyMetGlyGlyLeuGlyLysThrThr>
EXON2
Sbul2 ATCCTGATAAACAtTGTTAGCgATGCCCAAACACTTtCAGTCCTCCCAATACTTGGTATGGGGGGAtTAGGAAAGACGAC>
Sbul1 ATCCTGATAAACAATGTTAGCAATGCCCAAACACTTCCAGTCCTCCCAATACTTGGTATGGGGGGACTAGGAAAGACGAC
Sbul1 TCTTGCCCAAATGGTCTTCAATGATCAGAGAGTAATTGAGCATTTCCATCCCAAAATATGGATTTGTGTCTCGGAAGATT
LeuAlaGlnMetValPheAsnAspGlnArgValIleGluHisPheHisProLysIleTrpIleCysValSerGluAsp>
EXON2
Sbul2 aCTTGCCCAAATGGTCTTCAATGATCAGAGAGTAATTGAGCATTTCCtTCCCAAAATATGGATTTGTGTCTCGGAAGATT>
Sbul1 TCTTGCCCAAATGGTCTTCAATGATCAGAGAGTAATTGAGCATTTCCATCCCAAAATATGGATTTGTGTCTCGGAAGATT
Sbul1 TTAATGAGAAGAGGTTGATAAAGGAAATTGTAGAATCTATTGAAGAAAAGTCACTTGGTGGCATGGACTTGGCTCCACTT
PheAsnGluLysArgLeuIleLysGluIleValGluSerIleGluGluLysSerLeuGlyGlyMetAspLeuAlaProLeu>
EXON2
Sbul2 TTAATGAGAAGAGGTTGATAAAGGAAATTGTAGAATCTATTGAAGAAAAGTCACTTGGTGaCATGGACTTGGCTCCACTT>
Sbul1 TTAATGAGAAGAGGTTGATAAAGGAAATTGTAGAATCTATTGAAGAAAAGTCACTTGGTGGCATGGACTTGGCTCCACTT
Sbul1 CAAAAGAAGCTTCGGGACTTGCTGAATGGAAAAAAATATTTGCTCGTCTTAGATGATGTTTGGAATGAAGATCAAGATAA
GlnLysLysLeuArgAspLeuLeuAsnGlyLysLysTyrLeuLeuValLeuAspAspValTrpAsnGluAspGlnAspLys>
EXON2
Sbul2 CAAAAGAAGCTTCaGGACTTGCTGAATGGAAAAAAATATTTGCTtGTCTTAGATGATaTTTGGAATGAAGATCAAGATAA>
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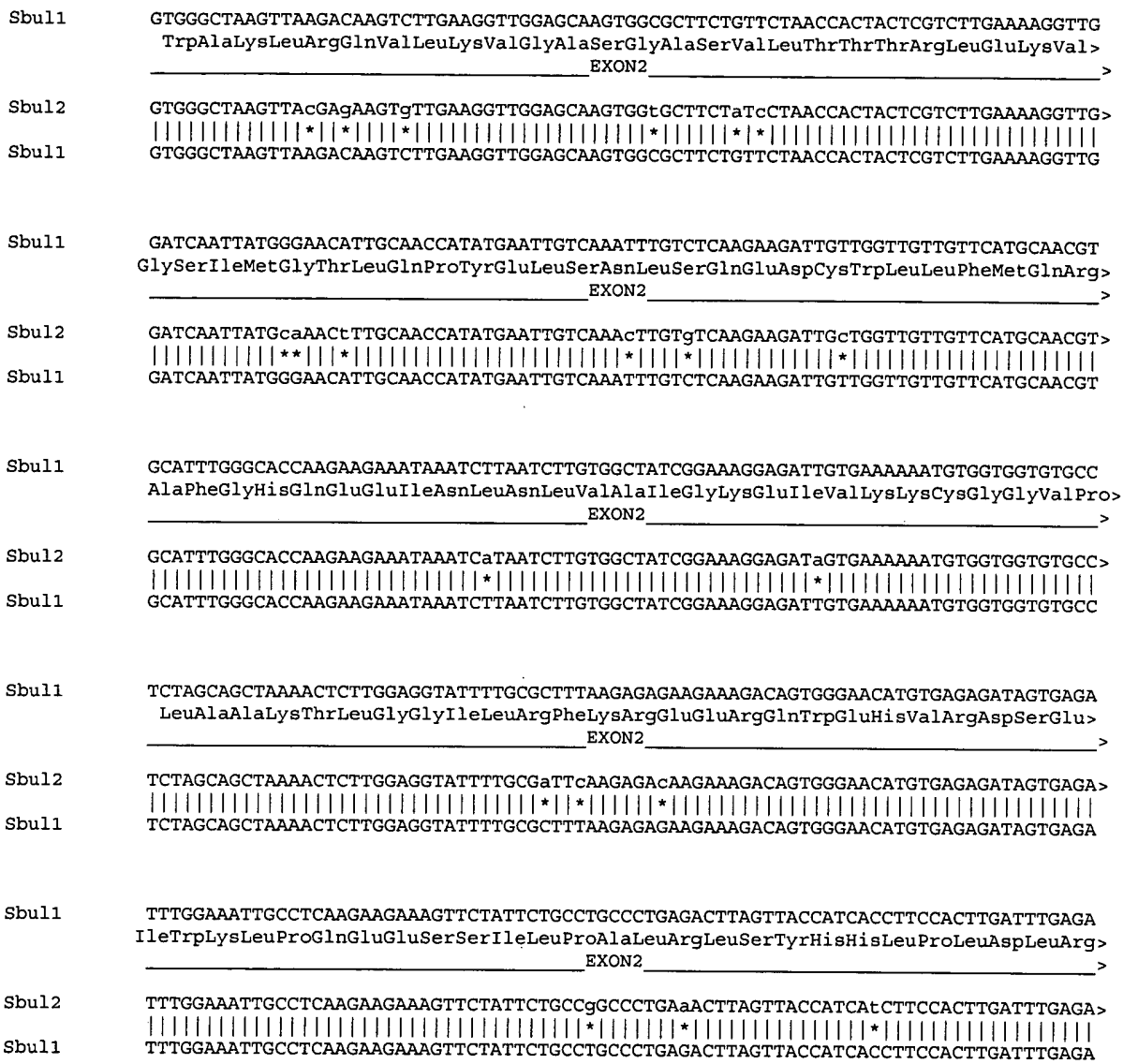
FIG. 7C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EXON2
Sbul2
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EXON2
Sbul2
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Sbul1
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Sbul1
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EXON2
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EXON2
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Sbul1
TCTAGCAGCTAAAACTCTTGGAGGTATTTTGCGCTTTAAGAGAGAAGAAAGACAGTGGGAACATGTGAGAGATAGTGAGA
Sbul1
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EXON2
Sbul2
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Sbul1
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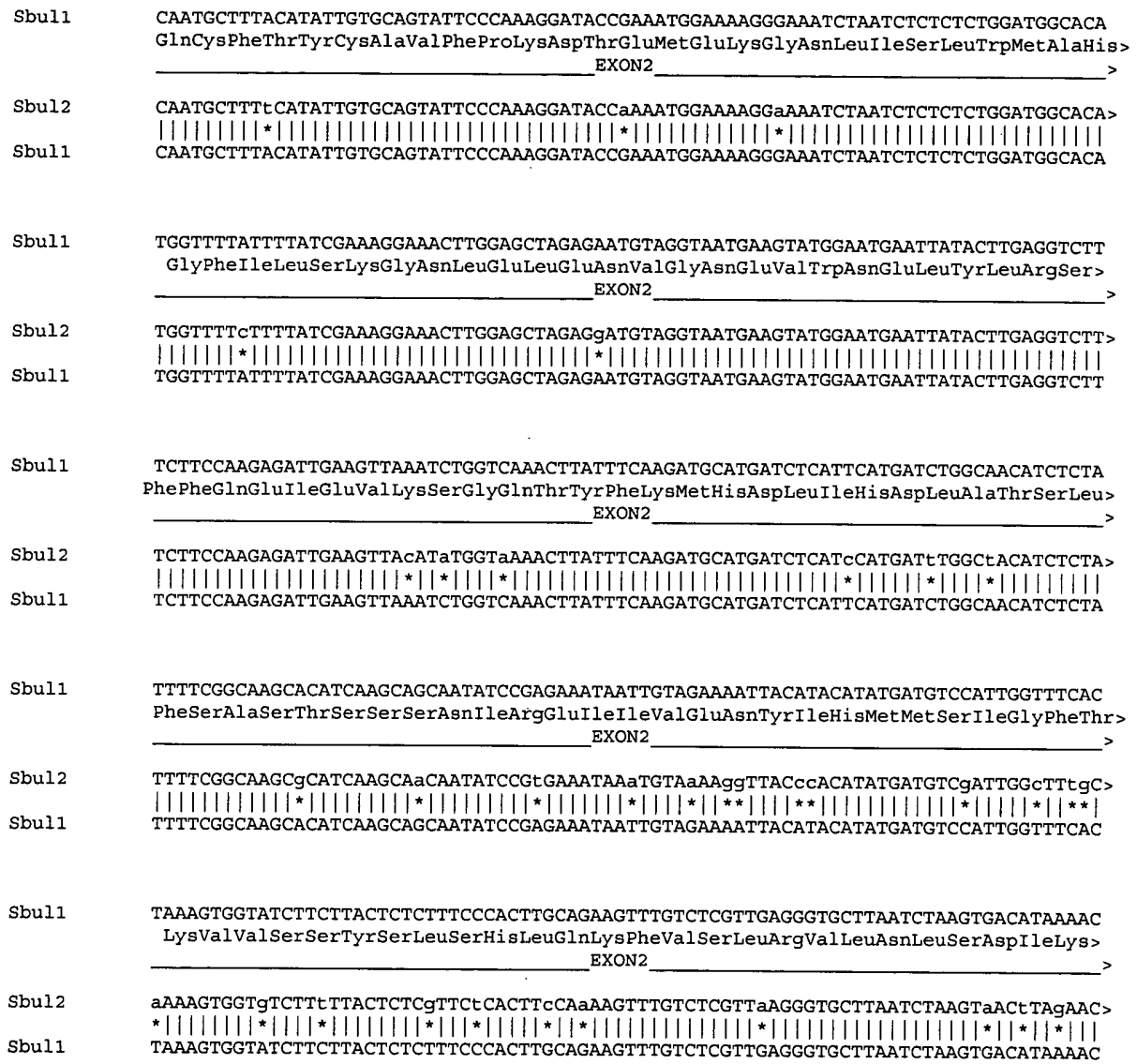
FIG. 7D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EXON2
Sbul2
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Sbul1
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EXON2
Sbul2
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Sbul1
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EXON2
Sbul2
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Sbul1
TCTTCCAAGAGATTGAAGTTAAATCTGGTCAAACTTATTTCAAGATGCATGATCTCATTCATGATCTGGCAACATCTCTA
Sbul1
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PheSerAlaSerThrSerSerSerAsnIleArgGluIleIleValGluAsnTyrIleHisMetMetSerIleGlyPheThr>
EXON2
Sbul2
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Sbul1
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LysValValSerSerTyrSerLeuSerHisLeuGlnLysPheValSerLeuArgValLeuAsnLeuSerAspIleLys>
EXON2
Sbul2
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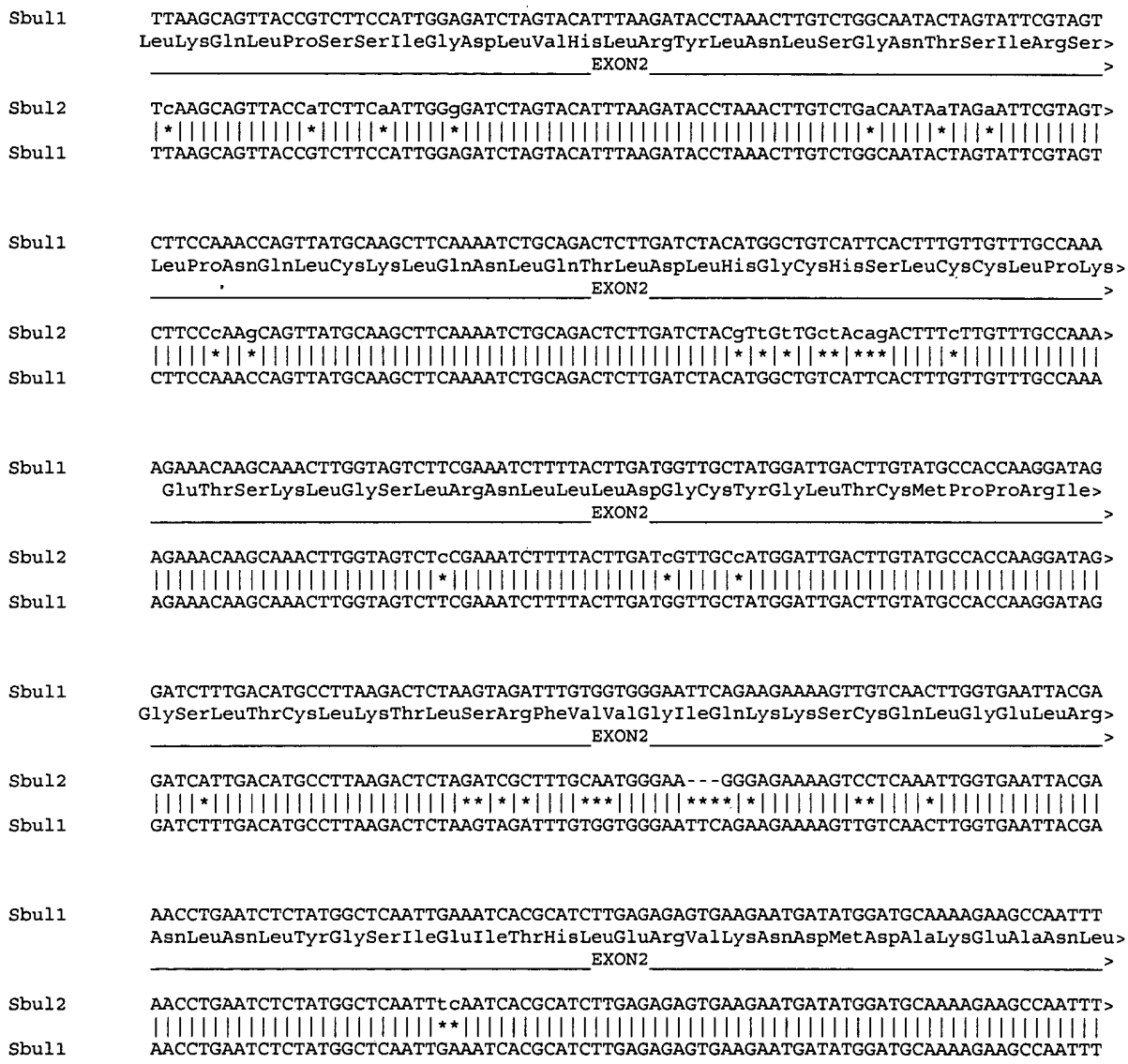
FIG. 7E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EXON2
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Sbul1 TTAAGCAGTTACCGTCTTCCATTGGAGATCTAGTACATTTAAGATACCTAAACTTGTCTGGCAATACTAGTATTCGTAGT
Sbul1 CTTCCAAACCAGTTATGCAAGCTTCAAAATCTGCAGACTCTTGATCTACATGGCTGTCATTCACTTTGTTGTTTGCCAAA
LeuProAsnGlnLeuCysLysLeuGlnAsnLeuGlnThrLeuAspLeuHisGlyCysHisSerLeuCysCysLeuProLys>
EXON2
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Sbul1 AGAAACAAGCAAACTTGGTAGTCTTCGAAATCTTTTACTTGATGGTTGCTATGGATTGACTTGTATGCCACCAAGGATAG
GluThrSerLysLeuGlySerLeuArgAsnLeuLeuLeuAspGlyCysTyrGlyLeuThrCysMetProProArgIle>
EXON2
Sbul2 AGAAACAAGCAAACTTGGTAGTCTcCGAAATCTTTTACTTGATcGTTGCcATGGATTGACTTGTATGCCACCAAGGATAG>
Sbul1 AGAAACAAGCAAACTTGGTAGTCTTCGAAATCTTTTACTTGATGGTTGCTATGGATTGACTTGTATGCCACCAAGGATAG
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GlySerLeuThrCysLeuLysThrLeuSerArgPheValValGlyIleGlnLysLysSerCysGlnLeuGlyGluLeuArg>
EXON2
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Sbul1 AACCTGAATCTCTATGGCTCAATTGAAATCACGCATCTTGAGAGAGTGAAGAATGATATGGATGCAAAAGAAGCCAATTT
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EXON2
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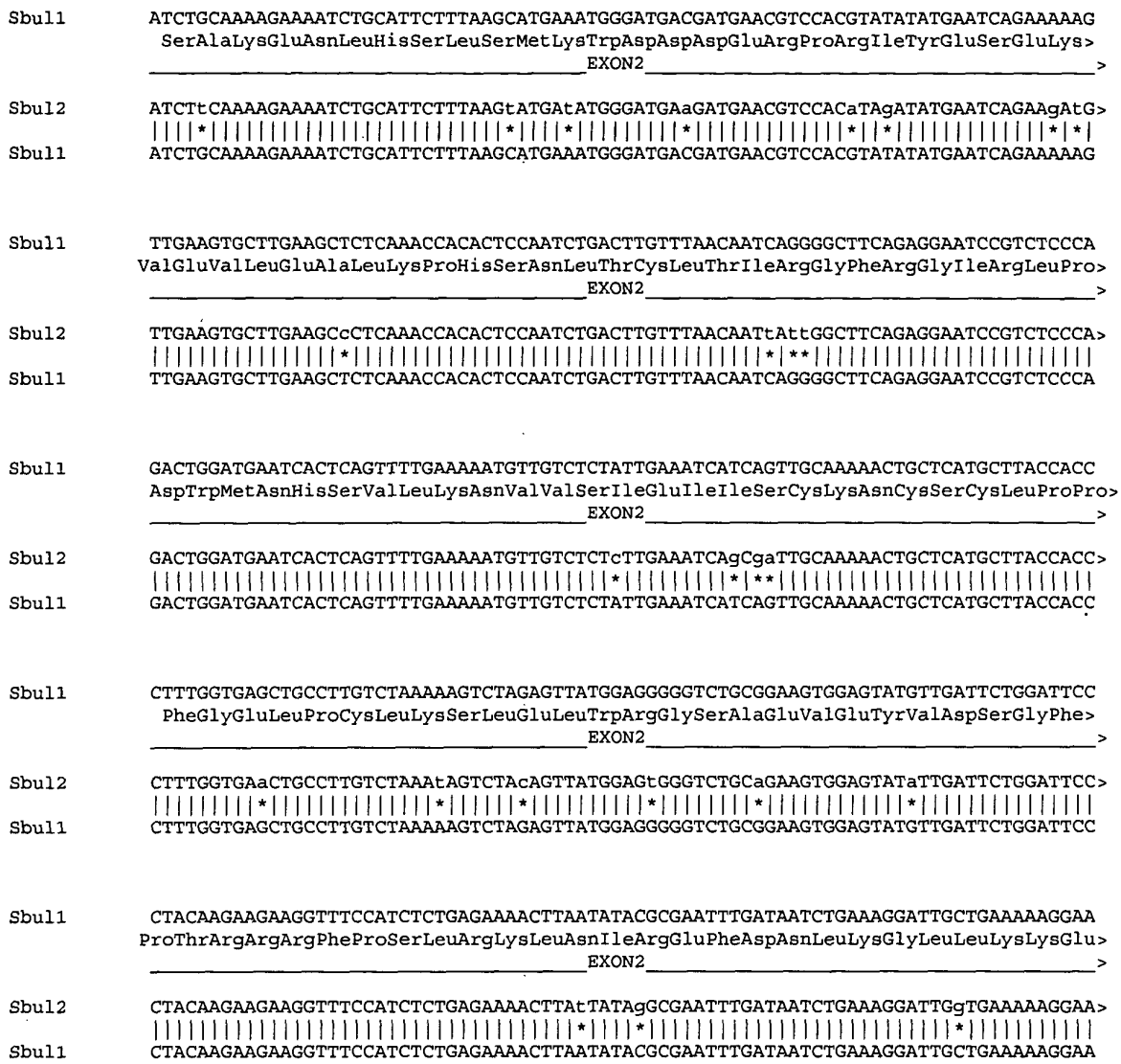
FIG. 7F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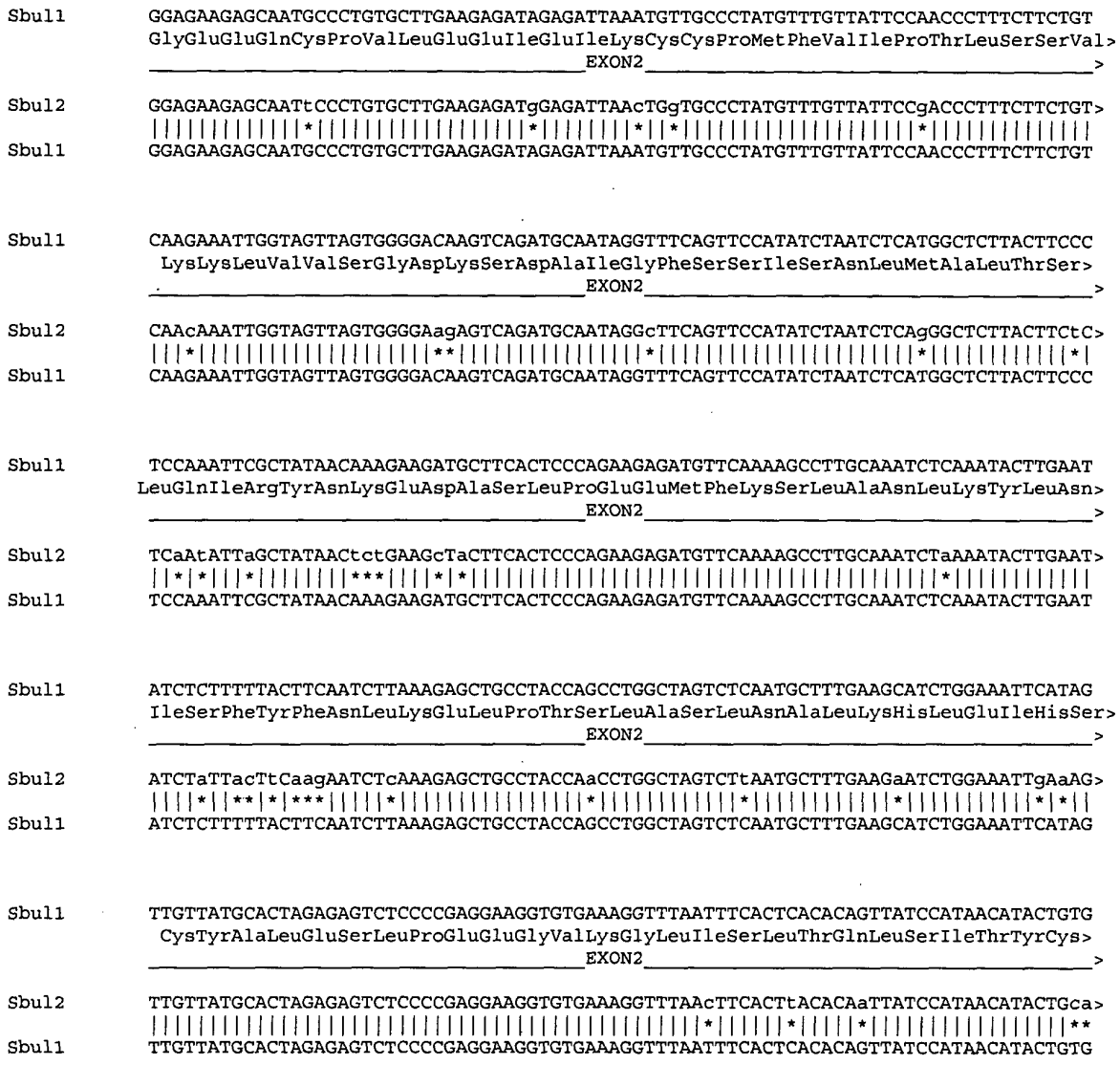
SerAlaLysGluAsnLeuHisSerLeuSerMetLysTrpAspAspAspGluArgProArgIleTyrGluSerGluLys>
EXON2
Sbul2 ATCTtCAAAAGAAAATCTGCATTCTTTAAGtATGAtATGGGATGAaGATGAACGTCCACaTAgATATGAATCAGAAgAtG>
Sbul1 ATCTGCAAAAGAAAATCTGCATTCTTTAAGCATGAAATGGGATGACGATGAACGTCCACGTATATATGAATCAGAAAAAG
Sbul1 TTGAAGTGCTTGAAGCTCTCAAACCACACTCCAATCTGACTTGTTTAACAATCAGGGGCTTCAGAGGAATCCGTCTCCCA
ValGluValLeuGluAlaLeuLysProHisSerAsnLeuThrCysLeuThrIleArgGlyPheArgGlyIleArgLeuPro>
EXON2
Sbul2 TTGAAGTGCTTGAAGCcCTCAAACCACACTCCAATCTGACTTGTTTAACAATtAttGGCTTCAGAGGAATCCGTCTCCCA>
Sbul1 TTGAAGTGCTTGAAGCTCTCAAACCACACTCCAATCTGACTTGTTTAACAATCAGGGGCTTCAGAGGAATCCGTCTCCCA
Sbul1 GACTGGATGAATCACTCAGTTTTGAAAAATGTTGTCTCTATTGAAATCATCAGTTGCAAAAACTGCTCATGCTTACCACC
AspTrpMetAsnHisSerValLeuLysAsnValValSerIleGluIleIleSerCysLysAsnCysSerCysLeuProPro>
EXON2
Sbul2 GACTGGATGAATCACTCAGTTTTGAAAAATGTTGTCTCTcTTGAAATCAgCgaTTGCAAAAACTGCTCATGCTTACCACC>
Sbul1 GACTGGATGAATCACTCAGTTTTGAAAAATGTTGTCTCTATTGAAATCATCAGTTGCAAAAACTGCTCATGCTTACCACC
Sbul1 CTTTGGTGAGCTGCCTTGTCTAAAAAGTCTAGAGTTATGGAGGGGGTCTGCGGAAGTGGAGTATGTTGATTCTGGATTCC
PheGlyGluLeuProCysLeuLysSerLeuGluLeuTrpArgGlySerAlaGluValGluTyrValAspSerGlyPhe>
EXON2
Sbul2 CTTTGGTGAaCTGCCTTGTCTAAAtAGTCTAcAGTTATGGAGtGGGTCTGCaGAAGTGGAGTATaTTGATTCTGGATTCC>
Sbul1 CTTTGGTGAGCTGCCTTGTCTAAAAAGTCTAGAGTTATGGAGGGGGTCTGCGGAAGTGGAGTATGTTGATTCTGGATTCC
Sbul1 CTACAAGAAGAAGGTTTCCATCTCTGAGAAAACTTAATATACGCGAATTTGATAATCTGAAAGGATTGCTGAAAAAGGAA
ProThrArgArgArgPheProSerLeuArgLysLeuAsnIleArgGluPheAspAsnLeuLysGlyLeuLeuLysLysGlu>
EXON2
Sbul2 CTACAAGAAGAAGGTTTCCATCTCTGAGAAAACTTAtTATAgGCGAATTTGATAATCTGAAAGGATTGgTGAAAAAGGAA>
Sbul1 CTACAAGAAGAAGGTTTCCATCTCTGAGAAAACTTAATATACGCGAATTTGATAATCTGAAAGGATTGCTGAAAAAGGAA

FIG. 7G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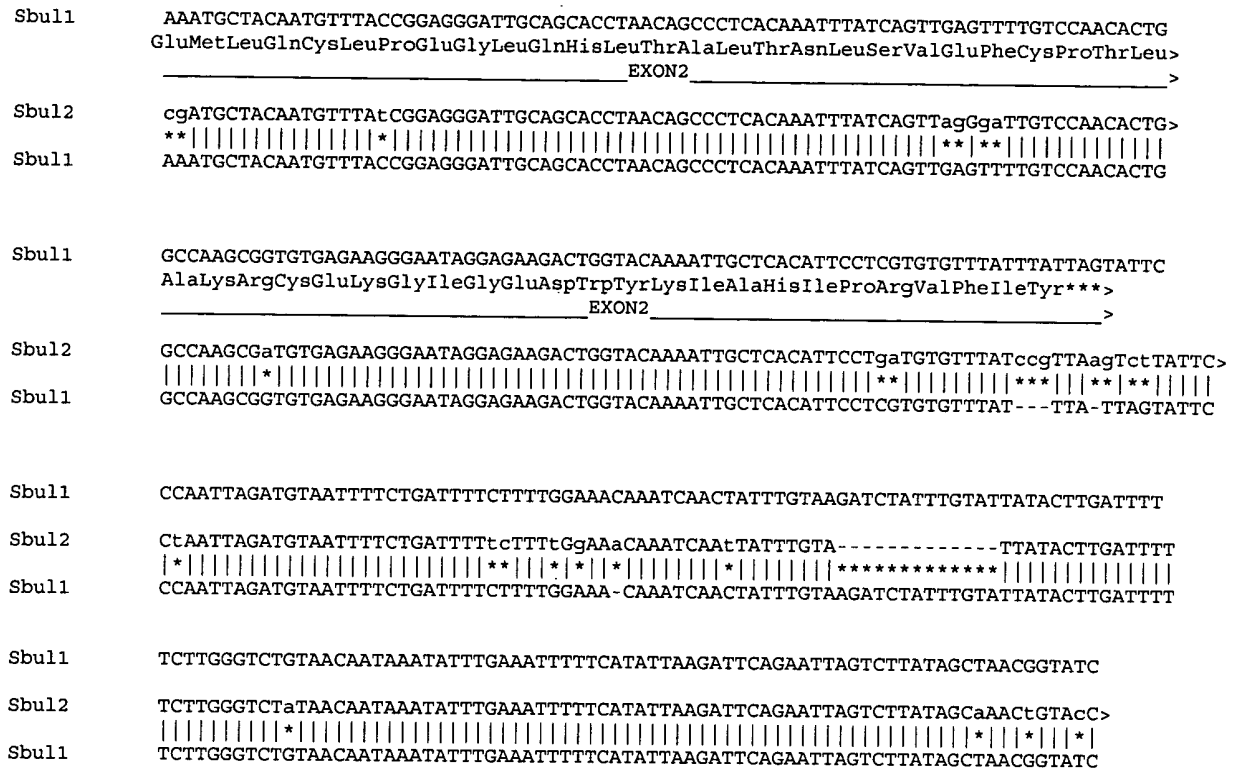
GlyGluGluGlnCysProValLeuGluGluIleGluIleLysCysCysProMetPheValIleProThrLeuSerSerVal>
EXON2
Sbul2 GGAGAAGAGCAATtCCCTGTGCTTGAAGAGATgGAGATTAAcTGgTGCCCTATGTTTGTTATTCCgACCCTTTCTTCTGT>
Sbul1 GGAGAAGAGCAATGCCCTGTGCTTGAAGAGATAGAGATTAAATGTTGCCCTATGTTTGTTATTCCAACCCTTTCTTCTGT
Sbul1 CAAGAAATTGGTAGTTAGTGGGGACAAGTCAGATGCAATAGGTTTCAGTTCCATATCTAATCTCATGGCTCTTACTTCCC
LysLysLeuValValSerGlyAspLysSerAspAlaIleGlyPheSerSerIleSerAsnLeuMetAlaLeuThrSer>
EXON2
Sbul2 CAAcAAATTGGTAGTTAGTGGGGAagAGTCAGATGCAATAGGcTTCAGTTCCATATCTAATCTCAgGGCTCTTACTTCtC>
Sbul1 CAAGAAATTGGTAGTTAGTGGGGACAAGTCAGATGCAATAGGTTTCAGTTCCATATCTAATCTCATGGCTCTTACTTCCC
Sbul1 TCCAAATTCGCTATAACAAAGAAGATGCTTCACTCCCAGAAGAGATGTTCAAAAGCCTTGCAAATCTCAAATACTTGAAT
LeuGlnIleArgTyrAsnLysGluAspAlaSerLeuProGluGluMetPheLysSerLeuAlaAsnLeuLysTyrLeuAsn>
EXON2
Sbul2 TCaAtATTaGCTATAACtctGAAGcTaCTTCACTCCCAGAAGAGATGTTCAAAAGCCTTGCAAATCTaAAATACTTGAAT>
Sbul1 TCCAAATTCGCTATAACAAAGAAGATGCTTCACTCCCAGAAGAGATGTTCAAAAGCCTTGCAAATCTCAAATACTTGAAT
Sbul1 ATCTCTTTTTACTTCAATCTTAAAGAGCTGCCTACCAGCCTGGCTAGTCTCAATGCTTTGAAGCATCTGGAAATTCATAG
IleSerPheTyrPheAsnLeuLysGluLeuProThrSerLeuAlaSerLeuAsnAlaLeuLysHisLeuGluIleHisSer>
EXON2
Sbul2 ATCTaTTacTtCaagAATCTcAAAGAGCTGCCTACCAaCCTGGCTAGTCTtAATGCTTTGAAGaATCTGGAAATTgAaAG>
Sbul1 ATCTCTTTTTACTTCAATCTTAAAGAGCTGCCTACCAGCCTGGCTAGTCTCAATGCTTTGAAGCATCTGGAAATTCATAG
Sbul1 TTGTTATGCACTAGAGAGTCTCCCCGAGGAAGGTGTGAAAGGTTTAATTTCACTCACACAGTTATCCATAACATACTGTG
CysTyrAlaLeuGluSerLeuProGluGluGlyValLysGlyLeuIleSerLeuThrGlnLeuSerIleThrTyrCys>
EXON2
Sbul2 TTGTTATGCACTAGAGAGTCTCCCCGAGGAAGGTGTGAAAGGTTTAAcTTCACTtACACAaTTATCCATAACATACTGca>
Sbul1 TTGTTATGCACTAGAGAGTCTCCCCGAGGAAGGTGTGAAAGGTTTAATTTCACTCACACAGTTATCCATAACATACTGTG

FIG. 7H


Sbul1
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GluMetLeuGlnCysLeuProGluGlyLeuGlnHisLeuThrAlaLeuThrAsnLeuSerValGluPheCysProThrLeu>
EXON2
Sbul2
cgATGCTACAATGTTTAtCGGAGGGATTGCAGCACCTAACAGCCCTCACAAATTTATCAGTTagGgaTTGTCCAACACTG>
Sbul1
AAATGCTACAATGTTTACCGGAGGGATTGCAGCACCTAACAGCCCTCACAAATTTATCAGTTGAGTTTTGTCCAACACTG
Sbul1
GCCAAGCGGTGTGAGAAGGGAATAGGAGAAGACTGGTACAAAATTGCTCACATTCCTCGTGTGTTTATTTATTAGTATTC
AlaLysArgCysGluLysGlyIleGlyGluAspTrpTyrLysIleAlaHisIleProArgValPheIleTyr***>
EXON2
Sbul2
GCCAAGCGaTGTGAGAAGGGAATAGGAGAAGACTGGTACAAAATTGCTCACATTCCTgaTGTGTTTATccgTTAagTctTATTC>
Sbul1
GCCAAGCGGTGTGAGAAGGGAATAGGAGAAGACTGGTACAAAATTGCTCACATTCCTCGTGTGTTTAT---TTA-TTAGTATTC
Sbul1
CCAATTAGATGTAATTTTCTGATTTTCTTTTGGAAACAAATCAACTATTTGTAAGATCTATTTGTATTATACTTGATTTT
Sbul2
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Sbul1
CCAATTAGATGTAATTTTCTGATTTTCTTTTGGAAA-CAAATCAACTATTTGTAAGATCTATTTGTATTATACTTGATTTT
Sbul1
TCTTGGGTCTGTAACAATAAATATTTGAAATTTTTCATATTAAGATTCAGAATTAGTCTTATAGCTAACGGTATC
Sbul2
TCTTGGGTCTaTAACAATAAATATTTGAAATTTTTCATATTAAGATTCAGAATTAGTCTTATAGCaAACtGTAcC>
Sbul1
TCTTGGGTCTGTAACAATAAATATTTGAAATTTTTCATATTAAGATTCAGAATTAGTCTTATAGCTAACGGTATC

FIG. 7I

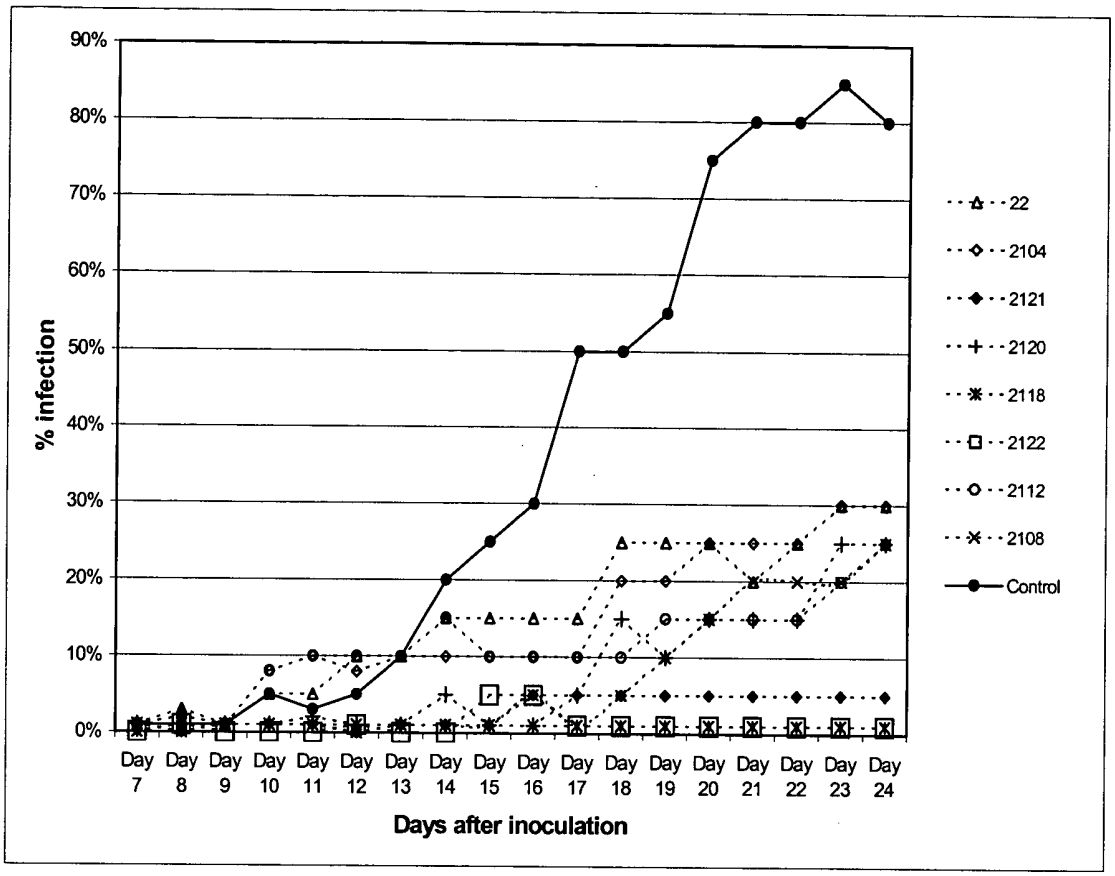
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% infection
Day 7
Day 8
Day 9
Day 10
Day 11
Day 12
Day 13
Day 14
Day 15
Day 16
Day 17
Day 18
Day 19
Day 20
Day 21
Day 22
Day 23
Day 24
Days after inoculation
22
2104
2121
2120
2118
2122
2112
2108
Control

FIG. 8